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# Report of Geotechnical Exploration For Soil and Foundation Evaluation

April 27, 2023

Prestige – Commerce Center (North Brunswick)

Block 1.07, Lot 4.46

Township of North Brunswick, Middlesex County, New Jersey

Prepared for:

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CED Project No. 21000124A

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# INTRODUCTION

This report presents the results of our geotechnical exploration program to provide geotechnical design criteria and foundation support recommendations for the proposed quick service restaurant and retail/medical office/restaurant building in the Township of North Brunswick, Middlesex County, New Jersey. Our scope of services for the field exploration for this project included the completion of sixteen (16) test borings, engineering evaluation of the subsurface data obtained, and the preparation of this report.

# SITE AND PROJECT DESCRIPTION

The subject project site is located in the Township of North Brunswick, Middlesex County, New Jersey as shown on the Site Location Map, Figure No. 1. The subject site currently a paved parking lot. Surround the subject site includes a shopping center to the north, a paved parking lot followed by commercial buildings to west, and US Route 1 to the south and east. The site is known as Block 4.46, Lot 1.07 on the local township tax maps.

According to the plan set, "Preliminary/Final Major Site Plan for Prestige," dated April 27, 2023, prepared by Colliers Engineering & Design, the proposed development consists of two buildings and associated parking, drive isles, and site improvements. One proposed building is a Freddy's drive-through at 2,800 SF in size. The second building is proposed as a retail, medical, and/or restaurant approximately 5,400 SF in size. Both buildings are anticipated to be slab on grade, one story, without basements or below grade mechanical areas. The existing and proposed site grades are very similar and we anticipate minimal cuts and fills will be required to achieve building slab grades.

At the time of this report, only preliminary site plans were available. We have commented on constructability of known proposed subsurface utilities. Architectural or foundation plans were not made available, but based on the size of the buildings we believe conventional shallow foundation systems are to be used.

# SCOPE OF SERVICES

The purpose for this subsurface exploration was to evaluate the subsurface conditions for the proposed construction, and to provide foundation and general geotechnical construction recommendations. We were authorized to perform the following scope of services:

a) Retain a drilling contractor to perform test borings to explore the subsurface soil and groundwater conditions through the advancement of sixteen test borings. Test borings were located based upon field measurements from existing base map information at the time of our field exploration program. No survey locations or elevations were provided.

b) Provide full-time technical observation of the work of the drilling contractor;

c) Obtain representative soil samples encountered within the test borings;

d) Evaluate and prepare test boring logs showing the types of soils, as well as depth to encountered groundwater; and,

e) Prepare this *Report of Geotechnical Exploration Soil and Foundation Evaluation*, presenting the results of our subsurface explorations, engineering evaluation, and subsequent geotechnical construction recommendations.

# SUBSURFACE EXPLORATION

The subsurface conditions at the site were explored on January 23 through 25, 2023 through the advancement of sixteen (16) test borings, identified herein at TB-1 through TB-16. A total of thirteen (13) test boring were terminated at approximately 10 to 12 feet below ground surface (bgs), two (2) test borings were terminated at approximately 13 to 15 feet bgs, and one test boring was terminated approximately 23 feet bgs. The approximate test boring locations are shown on the Exploration Location Plan, Figure No. 2.

The test borings were advanced by Soil Borings Drilling, LLC, of Collingswood, New Jersey, using standard hollow-stem auger drilling techniques and a truck mounted drill rig. Split spoon sampling was performed in accordance with ASTM D1586 (*Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils*). The number of blows required to drive the split spoon every 6 inches into the soil was recorded and is shown on the test boring log. The sum of blows for the interval from 6 inches to 18 inches is the N-value. The N-value indicates the soil resistance encountered within each sampling interval as per ASTM D1586.

The test borings were performed under the full-time technical observation of Colliers Engineering & Design. Representative soil samples were collected and visually identified in accordance with the Burmister Soil Classification System. Details pertaining to the subsurface conditions encountered are presented on the Test Boring Logs in Appendix A.

# SUBSURFACE CONDITIONS

## Regional Geology

According to the *Surficial Geology of the Monmouth Junction Quadrangle, Somerset, Middlesex, and Mercer Counties, New Jersey* (Stanford, 2002), the surficial geology at the site is Weathered Shale (Qws). The soils consist of silty clay to sandy silt, reddish brown, pale red, reddish yellow, and gray in color with many angular chips and fragments of shale. This layer is typically as much as 10 feet thick.

According to the *Bedrock Geology of the Monmouth Junction Quadrangle, Somerset, Middlesex, and Mercer Counties, New Jersey* (Beetle-Moorcroft, Monteverde, and Stanford, 2018), the bedrock at the site is part of the Passaic Formation (Upper Triassic). The formation is characterized by fine-grained to very fine-grained interbedded siltstone, shaley siltstone, silty mudstone and mudstone that is reddish-brown to brown in color. There are typically laminations of argillite and shale.

### Subsurface Description

All test borings were advanced in an existing asphalt parking lot with approximately 6 inches of asphalt at the surface with associated subbase materials of sands and gravels underlying the asphalt. Underlying the pavement section generally exists gray and brown Clay & Silt materials with small percentages of sand and gravel. This layer had Standard Penetration Test (SPT) or N-Values ranging between 7 and 30 blows per food (bpf), averaging approximately 15 bpf. Generally the clay & silt was found to be in a medium to stiff state of consistency. The clay & silt materials are highly moisture sensitive. Some test borings indicated the presence of wood in the upper soils horizon. It should be anticipated that some fills will be encountered that may need to be over-excavated and replaced with load bearing fills.

Underlying the clay & silts were gray and brown gravels with varying amounts of sand and fines. The gravels were likely the decomposed and weathered rock materials of the underlying Triassic shale and siltstone bedrock. The SPT N-values of these gravels ranged from 7 to greater than 50 bpf, averaging higher than 50 bpf. Several test borings were terminated in this gravel layer due to auger refusal.

### Groundwater Conditions

Groundwater was not encountered in test borings during this subsurface exploration; however, isolated perched water conditions were encountered at a few of the test boring locations. The perched water is due to the shallow clay & silt materials in the upper 2 to 6 feet. If precise groundwater levels are required, it is recommended that monitoring wells be installed and monitored for several months. It should be noted that fluctuation in groundwater levels can occur due to several factors, including variations in precipitation, seasonal changes, and site development activities which can alter surface water drainage paths. Groundwater flow over the fractured rock and in fracture zones with depth should be anticipated.

## DISCUSSION AND RECOMENDATIONS

The following discussion and recommendations are based upon our review and evaluation of the subsurface explorations conducted to date. The site is considered suitable for the proposed construction subject to the implementation of the specific site recommendations provided as follows:

### Site Preparation

The purpose of these site preparation procedures is to provide stable and uniform bearing conditions for the proposed building foundations, slab-on-grade and utilities. The following procedures should be performed under the technical observation of a Site Geotechnical Engineer:

- Install soil erosion and sedimentation control devices, as well as temporary stormwater management facilities, as specified by Site/Civil Engineer, or as requested by SE/SC commission needs.
- Site preparation and earthwork should be performed during dry or favorable weather conditions. Due to the nature of the clay & silt subsoils, the length of time that subgrades are exposed should be kept to a minimum unless protected.
- Maintain positive drainage conditions throughout construction, avoiding unnecessary ponding of stormwater in excavations or low areas of the site. Seal-roll exposed soil or subgrade surfaces prior to rain or snow events, and promptly remove any standing water immediately afterwards.
- Any existing underground or above-ground utility locations should be verified in the field and relocated or abandoned as necessary, prior to construction. If the option to abandon underground utilities in-place is chosen, we recommend that a lean cement grout (250 psi) be used to fill the underground utility lines after consultation with the architect/structural engineer.
- Completely demolish and remove any existing structural elements, including pavements, in their entirety from within the footprint areas of the proposed building additions and extending a minimum of 5 feet outboard of the proposed perimeters (where possible). Any backfilling that may be required, should be performed with compacted load bearing fill.
- Unsuitable (deleterious) fill, buried debris and obstructions were not encountered at the test boring locations; however, during construction some areas of unsuitable (deleterious) fill, buried debris or obstructions from previous site development may be encountered. If any unsuitable (deleterious) fill, buried debris or obstructions are encountered, they should be removed in their entirety and disposed of in accordance with applicable rules and the areas backfilled with compacted load bearing fill.
- Complete a surficial stabilization program within structural areas of the site (building footprint, pavements, etc.), plus a 5-foot perimeter (where possible). Prior to load bearing fill placement (within fill areas) and after the final subgrade has been reached (within cut areas), compact the exposed subgrades with a minimum 10-ton roller with a minimum of 4 passes applied in a crisscrossing pattern, where available. The vibratory or static modes shall be used as directed by the onsite representative of the Site Geotechnical Engineer, depending on possible impacts on the existing structure. Any remaining unstable zones should be removed and backfilled as directed by the onsite representative of the Geotechnical Engineer.
- Following the satisfactory subgrade preparation, place and compact load bearing fill, as needed, in thin, controlled, compacted lifts to achieve the final subgrade elevations in accordance with the recommendations presented in the Load Bearing Fill section of this report.
- Foundations and slabs should not be constructed on frozen ground. Any frozen ground beneath the foundations and slabs should be removed in its entirety and backfilled with compacted load bearing fill or allowed to completely thaw and be recompacted prior to the placement of reinforcement and concrete. The same recommendations apply to placement of load bearing fill.

- In accordance with the Occupational Safety and Health Administration (OSHA) requirements, all excavations shall be properly sloped or otherwise structurally retained to provide stable and safe working conditions.

## Over-Excavation/Stabilization

Construction during extended wet weather periods could create the need to over-excavate exposed soils if they become disturbed and cannot be recompacted due to elevated moisture content and/or weather conditions. The need for over-excavation should be confirmed through continuous observation and testing by the onsite representative of the Site Geotechnical Engineer. Selective drying and recompaction of unsuitable subgrades may be accomplished by scarifying or windrowing surficial material during extended periods of dry and warm weather. Otherwise, use of imported material or chemical subgrade stabilization methods, such as cement or lime, could become necessary at additional cost. The need for subgrade over excavation and/or stabilization will be dependent, in part, on the subgrade protection effort exercised by the Contractor.

Similar subgrade stability problems may develop after completion of subgrade preparation due to weather and construction traffic affects, requiring additional stabilization efforts prior to floor slab-on-grade and pavement/sidewalk construction. We recommend that prepared subgrade surfaces that are to remain exposed to the elements and/or construction traffic should receive a protective, confining layer of dense-graded aggregate (crushed stone or recycled concrete aggregate, NJDOT Specifications).

## Load Bearing Fill

All fill/backfill proposed to support the building and site features that would be adversely affected by settlement is considered load bearing fill. Materials used as load bearing fill should consist of inorganic, readily compactable, predominantly well-graded granular soils with no more than 15 percent fines (material passing the No. 200 sieve). We recommend that fragments having a maximum dimension greater than 3 inches be excluded from the fill.

Imported granular fill material, if required, shall be well-graded and should conform to the material gradation requirements presented in Table No. 1. Alternate imported fill materials such as dense graded aggregate and recycled concrete aggregates may also be considered subject to approval by the Site Geotechnical Engineer.

**Table No. 1**
**Recommended Gradation Envelope - Imported Granular Fill**

| U.S. Standard Sieve Size | Percent Finer by Weight |
|---|---|
| 2" | 100 |
| 1" | 80-100 |
| 3/8" | 70-100 |
| No. 10 | 50-100 |
| No. 30 | 30-85 |
| No. 60 | 15-65 |
| No. 200 | 5-15 |

The moisture content of the fill materials should be controlled to within tolerable limits of the optimum moisture content by conditioning (e.g. wetting, aeration, or soil blending) to facilitate compaction. The field moisture-density relationship of materials shall be determined in accordance with the modified Proctor (ASTM D1557) for all general and/or bulk load bearing fill. Fill placement and compaction activities shall be observed under the technical observation of the Site Geotechnical Engineer.

Subgrades to receive fill should be evaluated for stability by the onsite representative of the Geotechnical Engineer immediately prior to fill placement. Compaction effort for each lift of fill should be verified by in-place density testing prior to placement of subsequent lifts. Load bearing granular fill should be placed in horizontal lifts with a maximum loose-lift thickness of 8 inches. We recommend that load bearing fill within the construction areas be compacted to the requirements outlined in Table No. 2. In addition, we recommend that fills be visually stable under construction traffic, as determined by a representative of the Geotechnical Engineer. Quality control testing of in-place fill densities should be conducted throughout the earthwork, load bearing fill, and subgrade preparation activities. Adjustments to the lift thickness and/or compaction equipment may be required, as directed by the onsite representative of the Geotechnical Engineer, based on prevailing weather conditions at the time of fill placement and performance of the compacted soils.

**Table No. 2**
**Recommended Minimum Compaction**

| Type of Support | Granular Load-Bearing Fill |
|---|---|
| Structural fill below foundations, slabs, and pavements | 95% Modified Proctor |
| Backfill for retaining walls, below-grade walls and utility trenches | 92% Modified Proctor |
| General fill for landscaped and other non-structural areas | 90% Modified Proctor |

## Foundation Recommendations

The test borings indicate that the proposed building construction can be adequately supported using a conventional shallow foundation system, provided that the proper site preparation techniques, site-specific stabilization and load bearing fill procedures outlined above are implemented. Conventional spread and strip footings may be designed and proportioned assuming a maximum allowable (net) soil bearing pressure of 3,000 pounds per square foot (psf). The minimum width of continuous wall footings should be 24 inches, and the minimum horizontal dimension of isolated column footings should be 36 inches, regardless of the bearing pressure developed. All exterior footings/bottoms should be set at least 36 inches below the adjacent exterior grade for frost protection and bearing considerations. Interior footing bottoms should be set at least 24 inches below the finished floor elevation. In addition, we recommend that the shallow foundations bear below a zone bounded by a plane that extends outward and upward on a 1H:1V slope from any underground utility excavation, site grades, or other underground features.

Footing bearing subgrades should be compacted using a “jumping jack” or other trench compaction equipment upon completion of footing excavation and prior to reinforcing steel installation (plate tamper is not suitable). Afterwards, the foundation bearing surface should be observed by the onsite representative of the Geotechnical Engineer prior to foundation construction (i.e. reinforcing steel installation and concrete placement) for consistency with the recommended design allowable soil bearing pressure.

Due to the moisture sensitivity of the clay and silt material, the length of time that the exposed subgrade remains exposed to weather conditions should be kept to a minimum so as to not generate more unsuitable material removal. Onsite soils and fill exposed to weather conditions may soften, requiring removal and replacement prior to fill placement and foundation installation. Water that accumulates in the bottom of the excavation should be removed promptly. We recommend consideration be given to using compacted DGA/RCA material in foundation excavations to protect the subgrades if concrete placement will not occur in a relatively short time after excavation.

Following proper site preparation techniques, we estimate the potential for post-construction total settlement of less than 1 inch, and 0.5 of an inch of differential settlement between adjacent columns. These values are generally within tolerable limits for these types of structures.

## Floor Slab

Providing the proposed building subgrade is prepared, compacted, and proof-rolled under the observation of an onsite representative of the Geotechnical Engineer as described in the above sections of this report, the floor slabs may be supported on-grade in accordance with the following criteria.

The floor slab subgrade shall be compacted with a large vibratory roller immediately prior to installation of the aggregate base to re-compact any materials disturbed by previous construction activities or adverse weather conditions. Any unstable zones detected that cannot be stabilized by

additional compaction efforts should be removed, and the excavated area backfilled with load bearing fill.

An aggregate base course of a dense-graded aggregate (DGA) consisting of crushed stone or recycled concrete (NJDOT Specification) is recommended below the slab to promote uniform support and curing conditions. If placed immediately prior to slab construction, the minimum compacted thickness shall be 4 inches. Alternatively, if placed earlier as the final lift of structural fill and used as a working surface during construction, the minimum compacted thickness shall be 6 inches. This second approach is acceptable provided the aggregate base is repaired, re-graded, and re-compacted as needed prior to concrete placement. All structural fill supporting the floor slab, including the DGA base course, should be compacted to a minimum of 95 percent of the maximum dry density, as determined by the modified Proctor test (ASTM D1557). The aggregate should be dampened just prior to concrete placement to allow for proper curing of the concrete. These procedures are intended to interrupt the rise of capillary moisture through the slab and to provide uniform concrete curing conditions.

We anticipate that, following proper site preparation, the subgrade soils and import load bearing fill can achieve a Modulus of Subgrade Reaction on the order of 150 pounds per cubic inch (pci). Reinforced concrete floor slabs should be simply supported at wall and column junctures to allow unrestricted rotation of the slab edges. Control joints should be provided at the slab and wall/column interfaces to reduce the potential for slab cracking, should the building settle differentially from the floor slab. Alternatively, the slabs should be free to undergo vertical deflections at the edges.

Based on the existing subgrade soil at the site, a coefficient of sliding friction of 0.4 may be used for design of a floor slab without a vapor retarder. Where vapor retarders are used, a reduced coefficient of sliding friction of 0.20 should be used for design.

## Seismic Design Considerations

In accordance with the provisions of the 2018 International Building Code (New Jersey Edition), the site generally has a Site Class Definition of “D” for the existing subsurface soil and groundwater conditions. This classification was determined by utilizing the Standard Penetration Test (SPT) blow count data through the upper 23 feet of the subsurface profile. Medium compact conditions were assumed throughout the remainder of the soil profile to a depth of 100 feet. The site soils are not a concern for soil liquefaction. The following design parameters are provided utilizing tables in the IBC Code and United States Geological Survey (USGS) design tools:

From the USGS and using ASCE 7-16 information (See Appendix B):

| | |
|---|---|
| Short Period Spectral Acceleration ($S_s$) | 0.25 |
| Spectral Acceleration at 1 Second ($S_1$) | 0.055 |

| | |
|---|---|
| Peak Ground Acceleration (PGA) | 0.149g |
| Modified Peak Ground Acceleration ($PGA_M$) | 0.224g |

## Pavement Recommendations

New pavements can be constructed on stabilized in-place soils or newly placed and compacted load bearing fill. Immediately prior to pavement construction, the exposed pavement subgrade should be compacted with a minimum 10-ton roller (smooth drum) and be proof-rolled with a loaded tri-axle dump truck under the observation of the onsite representative of the Site Geotechnical Engineer to evaluate stability. Subgrade areas that are observed to be unstable should be selectively over-excavated to more stable material and replaced with load bearing fill or granular subbase material.

Depending on the timing between pavement subgrade preparation and pavement section construction, the contractor should anticipate some remedial effort to achieve a stable subgrade prior to paving, even if the subgrade soils had previously been compacted to the required densities. Prudent scheduling of pavement construction and control of construction equipment traffic will reduce the need for potential remedial work.

Provided the pavement subgrade is prepared in accordance with the recommendations contained herein using well graded granular fills, we recommend the flexible pavement sections be designed assuming a California Bearing Ratio (CBR) of 8 for the subgrade soils and that drained conditions be maintained. Adequate drainage of the pavement base course via underdrains and/or sub drains at inlets should be provided to relieve the effects of any seepage or surface water infiltration.

We recommend that the minimum pavement section designs be predicated on current AASHTO design criteria and site-specific traffic loading conditions, once developed. If anticipated traffic and loading conditions become available, specifically ESAL counts, site specific pavement recommendations can be provided for the proposed service levels. Routine maintenance of the pavement should provide a 20-year life expectancy. The durability and longevity of the pavement sections are directly based on the quality of the Contractor's installation procedures. Subgrade preparation, crushed stone base installation, asphalt compaction, and any concrete placement should be monitored by the onsite representative of the Site Geotechnical Engineer to verify adherence to the recommendations and specifications.

The traffic conditions are typically divided into two classes: light-duty pavement and heavy-duty pavement. We anticipate that the site will predominantly consist of heavy-duty pavement, particularly in the truck parking and truck drive aisles, as well as other paved regions that will be exposed to consistent truck traffic. We anticipate that the light-duty pavement will be reserved for parking areas limited to passenger vehicle traffic only.

The pavement for loading/unloading zones (i.e. truck dock aprons, dolly pads, and/or trash dumpster pick-up areas) will be subjected to heavy concentrated wheel or point loads. This frequently results in rutting of asphalt pavements and ultimately in failure. Therefore, we

recommend an increased, reinforced section of rigid pavement be utilized in such areas. We suggest the design team considers a minimum of 8 inches of 4,500 psi air-entrained concrete reinforced with WWF or macrofiber, over 6 inches of aggregate base course (NJDOT DGA). The final concrete pavement design (by others) should address the need for reinforcing and provide adequate joint spacing plans and details.

## Temporary Excavations

Temporary bracing or "stay-forms" may be necessary for foundation and/or utility excavations. For deeper excavations, the use of relatively flat slopes, benching, or temporary bracing and trench shields may be needed.

Temporary excavation stability is a function of many factors including the presence and abundance of groundwater, the type and density of the various soil strata, the depth of excavation, surcharge loadings adjacent to the excavation, and the length of time and weather conditions while the excavation remains open. It is the responsibility of the Contractor to maintain safe excavations in conformance with all applicable federal, state, and local regulations such as OSHA. All excavations should conform to applicable sloping or shoring standards for worker access. Temporary sheeting and shoring shall be designed and sealed by a Professional Engineer registered in the State of New Jersey. These designs shall be submitted for review by the Site Geotechnical Engineer prior to construction.

## Surface Water and Groundwater Control

Surface grading should be maintained on a continual basis during construction to direct surface water runoff away from open excavations and prevent water from pooling on subgrade soils. The contract documents should require the contractor to provide whatever means and methods are necessary to maintain stable, relatively dry excavations and subgrade conditions at all times during construction.

Groundwater was not encountered in the test borings; however, some test borings indicated perched water conditions. We believe the groundwater conditions encountered are indicative of the regional groundwater table. Based on the anticipated final site grades and below grade excavations, groundwater is not anticipated to be encountered within the shallow excavations (less than 8 feet bgs). Should groundwater, perched water or seepage be encountered during installation of below grade structures or utilities, pumping using standard sump pit and pump techniques should be sufficient to control such water conditions, provided excavations extend no deeper than ten feet below existing site grades.

### Below Grade Utilities

Any proposed underground utility installations are not anticipated to be impacted by groundwater concerns.

The majority of site soils will be suitable for support of subsurface utilities. We offer the following recommendations specific to utility construction:

- Any excavated utility trenches beneath the proposed finished floor or pavement/sidewalk subgrades should have the subgrade soils compacted and evaluated by the Site Geotechnical Engineer or technician, then backfilled with compacted load bearing fill in accordance with the recommendations outlined in the *Load Bearing Fill* section of this report. If loose or otherwise unstable material is present at the subgrade level, this material should be removed and replaced with load bearing fill.
- Prior to installation, the bearing surface for utility structures (manholes, vaults, etc.) and piping should be evaluated by the Site Geotechnical Engineer or technician. Should debris or unsuitable soils be encountered at the utility invert levels, the subgrade should be over-excavated a minimum depth of 6 inches and backfilled with load-bearing fill material to provide uniform support.
- The utility structures and piping should receive a bedding of at least 4 inches of dense-graded aggregate (DGA), as defined by current NJDOT construction standards.
- Utility excavations are anticipated to expose some highly weathered rock (platy gravels) which may be difficult to reuse as utility trench backfill. DGA/RCA materials may be required for use as utility backfill as needed.

### Clean Fill Evaluation

We understand that the site earthworks may not result in a balanced site. If onsite materials resulting from the proposed earthworks are to be removed from the site, a Clean Fill evaluation may

be required to satisfy NJDEP, as well as the receptor of the material. Conversely, if materials are to be imported to the site, Clean Fill documentation should be provided to the property owner by the Contractor.

## CONSTRUCTION OBSERVATIONS

Regardless of the thoroughness of a geotechnical engineering exploration, there is always a possibility that conditions between the test borings and below the depths explored may be different from those encountered in the test borings, that conditions are not as anticipated by the designers, or that the construction process has altered the subsurface conditions. Therefore, geotechnical engineering construction observation should be performed under the supervision of a Geotechnical

Engineer from Colliers Engineering & Design who is familiar with the intent of the recommendations presented herein. This observation is recommended to evaluate whether the conditions anticipated in the design actually exist or whether the recommendations presented herein should be modified where necessary. Colliers Engineering & Design should also provide onsite observation and testing on a full-time basis during excavation operations, subgrade preparation, foundation installation, and all critical earthwork operations. Colliers Engineering & Design has the capability of providing these services and can provide a proposal to perform the on-site quality assurance observation and materials testing.

# CLOSING

The discussions and recommendations presented in this report are based, in part, on the explorations accomplished for this evaluation. The number, location, and depth of the explorations were completed within the constraints of budget and site access to yield the information to formulate the recommendations

We recommend that the test boring logs be a part of the specifications for the project along with a reference to the plan sheets that contain the test boring locations for informational purposes. Should the data not be adequate for the Contractor's purposes, the Contractor may make, prior to bidding, his own explorations, tests, and analyses.

# LIMITATIONS

This geotechnical exploration program has been performed in accordance with generally accepted engineering practice and applicable design standards as referenced herein. This report and its supporting documentation have been prepared exclusively for the use of our Client pursuant to the Agreement between Colliers Engineering & Design, Inc. and the Client. All provisions set forth in the Agreement and the Business Terms and Conditions attached thereto are incorporated herein by reference. No warranty, express or implied, is made herein.

The findings, conclusions, and recommendations contained in this report are based on data revealed by limited exploration and testing of the subsurface at the referenced project site. The explorations indicate subsurface conditions at the specific locations and times explored, and only within the depths penetrated. Should deviations from the described subsurface conditions be encountered at any time prior to or during construction, Colliers Engineering & Design should be notified immediately so that modifications to our recommendations can be made, if necessary.

This report is applicable only to the contemplated project design described herein, and any changes in the design should be brought to our attention so that we may evaluate whether our recommendations will be affected. Colliers Engineering & Design is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analysis without the expressed written authorization of Colliers Engineering & Design. As such, the conclusions and recommendations contained in this report are pending our

review of final plans and specifications, and verification of subsurface conditions by our direct observation at the time of construction.

This report and supporting documentation are instruments of service. The subject matter of this report is limited to the facts and matters stated herein.

Our recommendations are based upon the assumption that the services of a qualified site Geotechnical Engineer will be retained for the observation of excavation operations, foundation installation, and all critical earthwork operations. Colliers Engineering & Design has the capability of providing these services and can provide a proposal to perform the on-site quality assurance observation and materials testing.

The scope of this geotechnical program did not include investigation or evaluation of any environmental issues, such as wetlands, or hazardous or toxic materials on, below, or in the vicinity of the subject site. Any statements in this report or supporting documentation regarding odors or unusual or suspicious items or conditions observed are strictly for the information of our Client.

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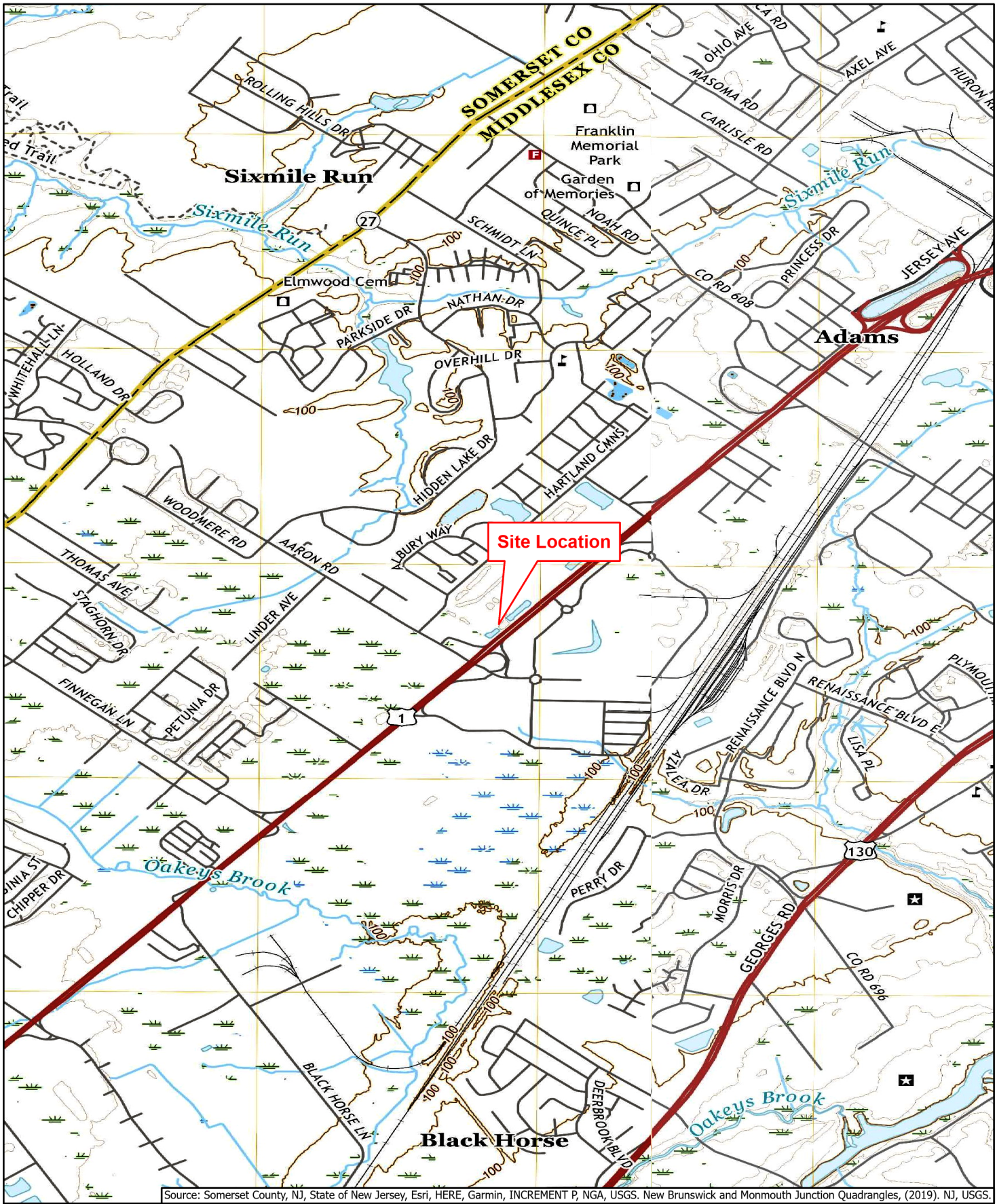
# Figures




Source: Somerset County, NJ, State of New Jersey, Esri, HERE, Garmin, INCREMENT P, NGA, USGS. New Brunswick and Monmouth Junction Quadrangles, (2019). NJ, USGS.

*Prepared For:*

Prestige Properties & Development Co., Inc

# SITE LOCATION MAP

## Prestige - Commerce Center (North Brunswick)

TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NJ 08902


*Prepared By:*

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| Drawn By: | Checked By: | Proj. No.: |
|---|---|---|
| SD | JJS | 21000214A |
| Scale: 1 IN = 2,000 FT | Date: 4/27/23 | Figure No.: 1 |

N
W E
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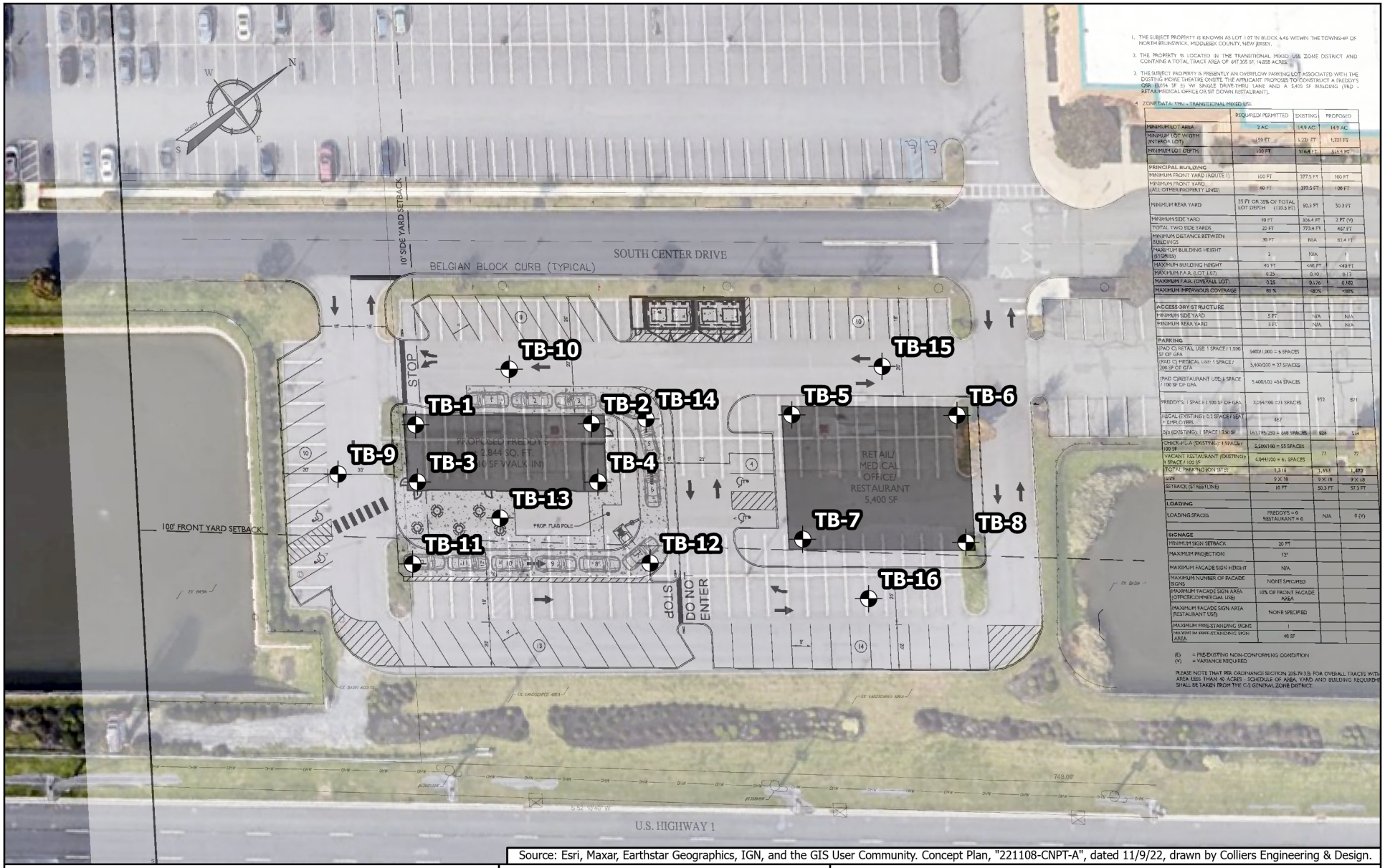
0 1,000 2,000 4,000 Feet




Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community. Concept Plan, "221108-CNPT-A", dated 11/9/22, drawn by Colliers Engineering & Design.

## LEGEND

⌖ INDICATES THE NUMBERS AND APPROXIMATE LOCATIONS OF TEST BORINGS PERFORMED FOR THIS EXPLORATION PROGRAM.

0 37.5 75 150 Feet

*Prepared For:*

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TITLE:

# EXPLORATION LOCATION PLAN

PROJECT:

**Prestige - Commerce Center (North Brunswick)**

TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NJ 08902

| | | | | | |
|---|---|---|---|---|---|
| Drawn By: | SD | Checked By: | JJS | Project No.: | 21000124A |
| Scale: | 1 IN = 80 FT | Date: | 4/27/23 | Figure No.: | 2 |

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# Appendix A

## Test Boring Logs

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# Burmister Soil Classification System

I - Soil and Fraction/Plasticity Definitions

| Material | Symbol | Fraction | Sieve Size | Definition |
|---|---|---|---|---|
| **Boulders** | Bldr | ----- | 9" + | Material retained on 9" sieve. |
| **Cobbles** | Cbl | ----- | 3" to 9" | Material passing 9" sieve and retained on the 3" sieve. |
| **Gravel** | G | Coarse (c)<br>Medium (m)<br>Fine (f) | 1" to 3"<br>3/8" to 1"<br>No. to 3/8" | Material passing the 3" sieve and retained on the No. 10 sieve. |
| **Sand** | S | Coarse (c)<br>Medium (m)<br>Fine (f) | No. 30 to No. 10<br>No. 60 to No. 30<br>No. 200 to No. 60 | Material passing No. 10 sieve and retained on the No. 200 sieve. |
| **Material** | **Symbol** | **Plasticity** | **Plasticity Index** | **Definition** |
| **Silt** | $ | Non-Plastic | Passing No. 200 (0.075 mm) PI<1 | Material passing the No. 200 sieve that is non-plastic in character and exhibits little or no strength when air-dried. |
| **Clayey Silt** | cy$ | Slight (SL) | 1 to 5 | Clay – Soil.<br><br>Material passing the No. 200 sieve which can be made to exhibit plasticity and clay qualities within a certain range of moisture content, and which exhibits considerable strength when air-dried. |
| **Silt & Clay** | $ & C | Low (L) | 5 to 10 | |
| **Clay & Silt** | C & $ | Medium (M) | 10 to 20 | |
| **Silty Clay** | $C | High (H) | 20 to 40 | |
| **Clay** | C | Very High (VH) | 40 Plus | |
| **Organic Silt** | (O$) | ----- | ----- | Material passing the No. 200 sieve which exhibits plastic properties within a certain range of moisture content and exhibits fine granular and organic characteristics. |

II - Proportion Definitions

| Component | Written | Proportions | Symbol | Percentage Range by Weight* |
|---|---|---|---|---|
| **Principal** | CAPITALS | --- | --- | 50 or more |
| **Minor** | Lower Case | And | a. | 35 to 50 |
| | | Some | s. | 20 to 35 |
| | | Little | l. | 10 to 20 |
| | | Trace | t. | 0 to 10 |

* Minus sign (-) lower limit, plus sign (+) upper limit, no sign middle range.

III – Terminology for Stratified Soils

| Terminology | Definition |
|---|---|
| Parting | 0 to 1/16" thickness |
| Seam | 1/16" to ½" thickness |
| Layer | ½" to 12" thickness |
| Occasional | One or less per foot of thickness |
| Frequent | More than one per foot of thickness |
| Alternating | Stratification descriptor (non-varved) |

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-1



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary _____ Other _____
HAMMER: CH _____ Safety X Automatic X
RODS: AW X NW _____ Other _____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/24/23
END OF DRILLING (0 hrs.) _____ _____

**ASTM D-1586**

DATE STARTED 1/24/23
DATE FINISHED 1/24/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 6 | 17 | 14 | 5 | | | | | S-1: ±6" Asphalt<br>Brown, Gray mf GRAVEL, some cmf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 12 | 8 | 7 | 8 | 3 | 2.5 | | | | S-2: Gray, Brown CLAY & SILT, trace mf Sand, trace f Gravel. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 8 | 5 | 5 | 8 | 15 | 2.75 | | | | S-3: Gray, Brown CLAY & SILT, trace mf Sand, trace f Gravel. Occasional Wood debris. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 8 | 6 | 8 | 8 | 16 | 3.0 | | | | S-4: Gray, Brown CLAY & SILT, some cmf Sand, trace(+) f Gravel. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 14 | 29 | 50/5" | | 16 | | | | | S-5: Brown mf GRAVEL, little cmf Sand, trace(+) Silt. (Moist). |
| 10 | 8.0'-9.4' | | | | | | | | | | |
| | S-6 | 37 | 50/3" | | | 11 | | | | 10.8 | S-6: Same as S-5. (Moist). |
| | 10.0'-10.8' | | | | | | | | | -10.8 | END OF TEST BORING AT 10.8 FEET |
| 15 | | | | | | | | | | | |
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NOTES:

Colliers Engineering & Design

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PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-2



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary _____ Other _____
HAMMER: CH _____ Safety X Automatic X
RODS: AW X NW _____ Other _____

| GROUNDWATER: | DEPTH (ft) | DATE |
|---|---|---|
| FIRST ENCOUNTERED ▽ | NE | 1/24/23 |
| END OF DRILLING (0 hrs.) ▽ | _____ | _____ |

**ASTM D-1586**

DATE STARTED 1/24/23
DATE FINISHED 1/24/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 13 | 15 | 12 | 4 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, some cmf Sand, trace Silt & Clay. Occasional Wood debris. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 4 | 3 | 5 | 4 | 12 | 2.5 | | | | S-2: Gray, Brown CLAY & SILT, trace cmf Sand, trace f Gravel. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 5 | 8 | 6 | 7 | 14 | 2.5 | | | | S-3: Same as S-2. (Very Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 4 | 9 | 16 | 17 | 3 | | | | | S-4: Gray, Brown CLAY & SILT, little mf Gravel, trace(+) cmf Sand. (Wet). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 12 | 15 | 19 | 17 | 23 | | | | | S-5: Brown mf GRAVEL, little mf Sand, trace(+) Silt. (Very Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 27 | 50/4" | | | 10 | | | | | S-6: Same as S-5. (Very Moist). |
| | 10.0'-10.8' | | | | | | | | | | |
| | | | | | | | | | | | |
| | S-7 | 44 | 50/3" | | | 4 | | | | 13.8 | S-7: Gray, Brown mf GRAVEL, little(-) mf Sand, trace Silt. (Moist). |
| 15 | 13.0'-13.8' | | | | | | | | | -13.8 | END OF TEST BORING AT 13.8 FEET |
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NOTES: Perched Water at 6'?

Colliers Engineering & Design

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PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-3



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary _____ Other _____
HAMMER: CH _____ Safety X Automatic X
RODS: AW X NW _____ Other _____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/24/23
END OF DRILLING (0 hrs.) _____ _____

DATE STARTED 1/24/23
DATE FINISHED 1/24/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

**ASTM D-1586**

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 7 | 13 | 14 | 7 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, some cmf Sand, trace(+) Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 18 | 10 | 13 | 6 | 6 | | | | | S-2: Gray, Brown mf GRAVEL, some cmf Sand, little(-) Silt & Clay. |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 6 | 5 | 6 | 9 | 13 | 2.75 | | | | S-3: Gray, Brown CLAY & SILT, trace mf Sand, trace f Gravel. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 6 | 7 | 6 | 7 | 17 | 2.75 | | | | S-4: Same as S-3. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 17 | 40 | 50/3" | | 19 | | | | | S-5: Brown mf GRAVEL, little(+) mf Sand, little Silt. (Moist). |
| 10 | 8.0'-9.3' | | | | | | | | | | |
| | S-6 | 50/5" | | | | 0 | | | | 10.4 | S-6: No Recovery. |
| | 10.0'-10.4' | | | | | | | | | -10.4 | END OF TEST BORING AT 10.4 FEET |
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NOTES:

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Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-4



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary _____ Other _____
HAMMER: CH _____ Safety X Automatic X
RODS: AW X NW _____ Other _____

| GROUNDWATER: | DEPTH (ft) | DATE |
|---|---|---|
| FIRST ENCOUNTERED | NE | 1/23/23 |
| END OF DRILLING (0 hrs.) | | |

**ASTM D-1586**

DATE STARTED 1/23/23
DATE FINISHED 1/23/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 6 | 13 | 15 | 4 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, some cmf Sand, little(-) Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 7 | 10 | 9 | 5 | 5 | | | | | S-2: Gray, Brown mf GRAVEL, some Silt & Clay, little(-) cmf SAND. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 5 | 5 | 6 | 6 | 10 | 2.5 | | | | S-3: Gray, Brown CLAY & SILT, little(+) mf Gravel, little(-) mf Sand. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 3 | 3 | 4 | 19 | 8 | | | | | S-4: Brown, Gray mf GRAVEL, little(+) Silt & Clay, trace(+) mf Sand. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 9 | 19 | 20 | 21 | 22 | | | | | S-5: Brown, Gray mf Gravel, little Silt, little mf Sand. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 19 | 31 | 50/3" | | 14 | | | | | S-6: Same as S-5. (Moist). |
| | 10.0'-11.3' | | | | | | | | | | |
| | | | | | | | | | | | |
| | S-7 | 31 | 50/5" | | | 7 | | | | | S-7: Same as S-5. (Moist). |
| 15 | 13.0'-13.9' | | | | | | | | | 13.9<br>-13.9 | END OF TEST BORING AT 13.9 FEET |
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NOTES:

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-5



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/25/23
END OF DRILLING (0 hrs.) ____ ____

**ASTM D-1586**

DATE STARTED 1/25/23
DATE FINISHED 1/25/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 10 | 16 | 17 | 8 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, little(+) cmf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 11 | 12 | 9 | 7 | 4 | 2.25 | | | | S-2: Brown, Gray SILT & CLAY, little(+) mf Gravel, little cmf Sand. (Wet). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 3 | 5 | 6 | 8 | 9 | 2.75 | | | | S-3: Brown, Gray CLAY & SILT, little cmf Sand, little(- ) mf Gravel. (Wet). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 6 | 6 | 6 | 15 | 2 | | | | | S-4: Gray, Brown mf GRAVEL, little(+) Silt & Clay, trace(+) cmf Sand. (Wet). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 10 | 21 | 31 | 50/5" | 12 | | | | | S-5: Brown mf GRAVEL, little cmf Sand, trace(+) Silt. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 38 | 50/3" | | | 5 | | | | 10.8 | S-6: Same as S-5. (Moist). |
| | 10.0'-10.8' | | | | | | | | | -10.8 | END OF TEST BORING AT 10.8 FEET |
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NOTES: Perched at 2'?

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-6



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/25/23
END OF DRILLING (0 hrs.) ____ ____

**ASTM D-1586**

DATE STARTED 1/25/23
DATE FINISHED 1/25/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 13 | 16 | 18 | 5 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, some cmf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 7 | 5 | 5 | 5 | 0 | | | | | S-2: No Recovery. |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 2 | 3 | 4 | 6 | 10 | 2.75 | | | | S-3: Gray, Brown CLAY & SILT, little cmf Sand, trace(+) f Gravel. Occasional Wood debris. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 9 | 11 | 9 | 8 | 13 | 2.75 | | | | S-4: Brown, Gray CLAY & SILT, and mf Gravel, little cmf Sand. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 11 | 32 | 50/4" | | 16 | | | | | S-5: Brown mf GRAVEL, little cmf Sand, trace(+) Silt. (Moist). |
| 10 | 8.0'-9.3' | | | | | | | | | | |
| | S-6 | 24 | 48 | 50/1" | | 11 | | | | | S-6: Same as S-5. (Moist). |
| | 10.0'-11.1' | | | | | | | | | 11.1 / -11.1 | END OF TEST BORING AT 11.1 FEET |
| 15 | | | | | | | | | | | |
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NOTES:

Colliers Engineering & Design

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PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-7



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

| GROUNDWATER: | DEPTH (ft) | DATE |
|---|---|---|
| FIRST ENCOUNTERED ▽ | NE | 1/23/23 |
| END OF DRILLING (0 hrs.) ▽ | ____ | ____ |

DATE STARTED 1/23/23
DATE FINISHED 1/23/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

**ASTM D-1586**

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 11 | 20 | 15 | 5 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, some(+) cmf Sand, trace(+) Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 10 | 5 | 5 | 6 | 6 | 2.75 | | | | S-2: Gray, Brown CLAY & SILT, little(+) mf Gravel, little cmf Sand. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 5 | 6 | 4 | 5 | 0 | | | | | S-3: No Recovery. |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 4 | 3 | 4 | 8 | 5 | 2.75 | | | | S-4: Same as S-2. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 9 | 22 | 51 | 50/2" | 20 | | | | | S-5: Brown, Gray mf Gravel, little Silt, little mf Sand. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 25 | 26 | 50/5" | | 16 | | | | | S-6: Same as S-5. (Moist). |
| | 10.0'-11.4' | | | | | | | | | 11.4 | |
| | | | | | | | | | | -11.4 | END OF TEST BORING AT 11.4 FEET |
| 15 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
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NOTES:

TEST BORING: TB-7
PAGE 1 OF 1

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-8



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/23/23
END OF DRILLING (0 hrs.) ____ ____

DATE STARTED 1/23/23
DATE FINISHED 1/23/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

**ASTM D-1586**

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 13 | 13 | 10 | 6 | | | | | S-1: ±6" Asphalt<br>Gray mf GRAVEL, and mf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 6 | 6 | 7 | 10 | 20 | 2.75 | | | | S-2: Brown, Gray CLAY & SILT, little(+) mf Gravel, little cmf Sand. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 7 | 7 | 7 | 6 | 10 | 2.5 | | | | S-3: Same as S-3. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 6 | 5 | 6 | 6 | 17 | 2.5 | | | | S-4: Same as S-3. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 3 | 10 | 29 | 34 | 19 | | | | | S-5: Brown, Gray mf GRAVEL, little Silt, little(-) mf Sand. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 30 | 50/4" | | | 10 | | | | | S-6: Same as S-5. (Moist). |
| | 10.0'-10.8' | | | | | | | | | | |
| | | | | | | | | | | | |
| | S-7 | 40 | 50/4" | | | 9 | | | | | S-7: Same as S-5. (Moist). |
| 15 | 13.0'-13.8' | | | | | | | | | | |
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| | S-8 | 48 | 50/3" | | | 6 | | | | | S-8: Same as S-5. (Moist). |
| 20 | 18.0'-18.8' | | | | | | | | | | |
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| | S-9 | 50/3" | | | | 1 | | | | 23.3 | S-9: Same as S-5. (Moist). |
| 25 | 23.0'-23.3' | | | | | | | | | -23.3 | END OF TEST BORING AT 23.3 FEET |
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NOTES:

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-9



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/24/23
END OF DRILLING (0 hrs.) ____ ____

**ASTM D-1586**

DATE STARTED 1/24/23
DATE FINISHED 1/24/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 10 | 14 | 24 | 10 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, some(-) cmf Sand, little Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 17 | 17 | 6 | 5 | 13 | 2.0 | | | | S-2: Gray, Brown SILT & CLAY, little mf Gravel, little(-) cmf Sand. (Very Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 7 | 5 | 4 | 4 | 14 | 2.75 | | | | S-3: Gray, Brown CLAY & SILT, trace(+) f Gravel, trace mf Sand. Occasional Wood debris. (Wet). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 7 | 6 | 7 | 6 | 20 | 2.75 | | | | S-4: Brown, Gray CLAY & SILT, little(-) mf Sand, trace(+) f Grave. (Wet). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 3 | 6 | 12 | 13 | 24 | | | | | S-5: Brown, Gray mf GRAVEL, little(+) cmf Sand, little Silt. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 15 | 16 | 27 | 38 | 24 | | | | | S-6: Same as S-5. (Moist). |
| | 10.0'-12.0' | | | | | | | | | 12.0 | |
| | | | | | | | | | | -12.0 | END OF TEST BORING AT 12.0 FEET |
| 15 | | | | | | | | | | | |
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NOTES: Perched at 4'?

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-10



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/25/23
END OF DRILLING (0 hrs.) ____ ____

**ASTM D-1586**

DATE STARTED 1/25/23
DATE FINISHED 1/25/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 11 | 14 | 11 | 3 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, little(+) cmf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 10 | 7 | 5 | 6 | 2 | | | | | S-2: Same as S-1. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 3 | 5 | 3 | 5 | 17 | 2.5 | | | | S-3: Gray, Brown CLAY & SILT, little(+) mf Gravel, trace(+) mf Sand. Occasional Wood debris. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 7 | 7 | 6 | 7 | 0 | | | | | S-4: No Recovery. |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 20 | 17 | 17 | 12 | 0 | | | | | S-5: No Recovery. |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 10 | 11 | 22 | 28 | 24 | | | | | S-6: Brown mf GRAVEL, little cmf Sand, trace(+) Silt. (Moist). |
| | 10.0'-12.0' | | | | | | | | | 12.0 | |
| | | | | | | | | | | -12.0 | END OF TEST BORING AT 12.0 FEET |
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NOTES:

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-11



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

| GROUNDWATER: | DEPTH (ft) | DATE |
|---|---|---|
| FIRST ENCOUNTERED | NE | 1/24/23 |
| END OF DRILLING (0 hrs.) | ____ | ____ |

DATE STARTED 1/24/23
DATE FINISHED 1/24/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

**ASTM D-1586**

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 10 | 11 | 13 | 6 | | | | | S-1: ±6" Asphalt<br>Brown, Gray mf GRAVEL, and cmf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 6 | 7 | 7 | 8 | 0 | | | | | S-2: No Recovery. |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 7 | 5 | 5 | 4 | 17 | 2.75 | | | | S-3: Brown, Gray CLAY & SILT, little(-) mf Gravel, trace(+) cmf Sand. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 4 | 3 | 3 | 3 | 19 | 2.25 | | | | S-4: Gray, Lt Brown SILT & CLAY, trace mf Sand, trace f Gravel. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 6 | 6 | 9 | 7 | 1 | | | | | S-5: Brown cmf SAND, some mf Gravel, trace Silt & Clay. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 18 | 29 | 50/2" | | 6 | | | | | S-6: Brown, Gray mf GRAVEL, little cmf Sand, trace(+) Silt & Clay. (Moist). |
| | 10.0'-11.2' | | | | | | | | | 11.2 | |
| | | | | | | | | | | -11.2 | END OF TEST BORING AT 11.2 FEET |
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NOTES:

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-12



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary _____ Other _____
HAMMER: CH _____ Safety X Automatic X
RODS: AW X NW _____ Other _____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/23/23
END OF DRILLING (0 hrs.) _____ _____

DATE STARTED 1/23/23
DATE FINISHED 1/23/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

**ASTM D-1586**

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 9 | 10 | 10 | 2 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf Gravel, some mf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 7 | 7 | 9 | 6 | 1 | | | | | S-2: Gray, Brown mf Gravel, some(+) Silt & Clay, little(-) mf Sand. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 6 | 6 | 5 | 6 | 10 | 2.5 | | | | S-3: Gray, Brown CLAY & SILT, little(+) mf Gravel, trace(+) mf Sand. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 6 | 6 | 6 | 5 | 5 | 2.25 | | | | S-4: Gray, Brown CLAY & SILT, trace(+) mf Sand, trace f Gravel. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 11 | 20 | 31 | 28 | 3 | | | | | S-5: Brown, Gray mf GRAVEL, little mf Sand, trace Silt & Clay. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 31 | 50/3" | | | 4 | | | | 10.8 | S-6: Same as S-5. (Moist). |
| | 10.0'-10.7' | | | | | | | | | -10.8 | END OF TEST BORING AT 10.8 FEET |
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NOTES:

TEST BORING: TB-12
PAGE 1 OF 1

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-13



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/24/23
END OF DRILLING (0 hrs.) ____ ____

**ASTM D-1586**

DATE STARTED 1/24/23
DATE FINISHED 1/24/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 11 | 15 | 13 | 4 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, little(+) cmf Sand, trace Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 10 | 9 | 7 | 7 | 5 | | | | | S-2: Same as S-1. (Very Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 5 | 4 | 4 | 4 | 10 | 2.75 | | | | S-3: Gray, Brown CLAY & SILT, trace(+) f Gravel, trace mf Sand. (Wet). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 4 | 4 | 6 | 9 | 0 | | | | | S-4: No Recovery. |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 32 | 21 | 30 | 44 | 21 | | | | | S-5: Brown mf GRAVEL, little(+) cmf Sand, trace(+) Silt. (Moist). |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 38 | 50/3" | | | 5 | | | | 10.8 | S-6: Same as S-5. (Moist). |
| | 10.0'-10.8' | | | | | | | | | -10.8 | END OF TEST BORING AT 10.8 FEET |
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NOTES: Perched at 4'?

TEST BORING: TB-13
PAGE 1 OF 1

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-14



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

| GROUNDWATER: | DEPTH (ft) | DATE |
|---|---|---|
| FIRST ENCOUNTERED | NE | 1/25/23 |
| END OF DRILLING (0 hrs.) | | |

**ASTM D-1586**

DATE STARTED 1/25/23
DATE FINISHED 1/25/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 6 | 10 | 10 | 4 | | | | | S-1: ±6" Aspahlt<br>Gray, Brown mf GRAVEL, little(+) cmf Sand, trace(+) Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 11 | 10 | 5 | 5 | 6 | 2.75 | | | | S-2: Dk Brown, Gray CLAY & SILT, little mf Gravel, trace(+) mf Sand. Occasional Wood debris. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 4 | 5 | 6 | 6 | 12 | 2.75 | | | | S-3: Brown, Gray CLAY & SILT, little mf Gravel, trace(+) mf Sand. Occasional Wood debris. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 7 | 7 | 8 | 9 | 14 | 3.0 | | | | S-4: Gray, Brown CLAY & SILT, little cmf Sand, trace f Gravel. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 11 | 27 | 44 | 50/3" | 0 | | | | | S-5: No Recovery. |
| 10 | 8.0'-9.8' | | | | | | | | | | |
| | S-6 | 22 | 50/4" | | | 12 | | | | 10.8 | S-6: Brown mf GRAVEL, little cmf Sand, trace(+) Silt. (Moist). |
| | 10.0'-10.8' | | | | | | | | | -10.8 | END OF TEST BORING AT 10.8 FEET |
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NOTES:

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-15



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

GROUNDWATER: DEPTH (ft) DATE
FIRST ENCOUNTERED NE 1/25/23
END OF DRILLING (0 hrs.) ____ ____

DATE STARTED 1/25/23
DATE FINISHED 1/25/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

**ASTM D-1586**

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 6 | 11 | 13 | 4 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, little cmf Sand, little(-) Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 15 | 11 | 9 | 7 | 1 | | | | | S-2: Same as S-1. (Wet). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 3 | 2 | 5 | 6 | 7 | 2.25 | | | | S-3: Brown, Gray Silt & Clay, and mf Gravel, little cmf Sand. (Wet). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 6 | 8 | 11 | 16 | 4 | 2.75 | | | | S-4: Gray, Brown CLAY & SILT, and mf Gravel, trace(+) cmf Sand. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 6 | 13 | 33 | 50/4" | 8 | | | | | S-5: Brown mf GRAVEL, little cmf Sand, trace(+) Silt. (Moist). |
| 10 | 8.0'-9.8' | | | | | | | | | | |
| | S-6 | 36 | 50/3" | | | 3 | | | | 10.8 | S-6: Brown mf GRAVEL, little(+) Silt & Clay, little cmf Sand. (Moist). |
| | 10.0'-10.8' | | | | | | | | | -10.8 | END OF TEST BORING AT 10.8 FEET |
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NOTES: Perched at 2'?

Colliers Engineering & Design

331 Newman Springs Road, Suite 203, Red Bank, NJ 07701

PROJECT: Prestige Commerce Center
Township of North Brunswick

LOCATION: Middlesex County, New Jersey
See Plan.

PROJECT NO. 21000124A

# TEST BORING: TB-16



GROUND ELEVATION (ft):
ELEV. FROM: Exist. Grade

CONTRACTOR: Soil Borings Drilling, LLC
DRILLER: A. Scafidi
DRILLING EQUIPMENT: Mobile Drill B-57
METHOD: HSA X Mud Rotary ____ Other ____
HAMMER: CH ____ Safety X Automatic X
RODS: AW X NW ____ Other ____

| GROUNDWATER: | DEPTH (ft) | DATE |
|---|---|---|
| FIRST ENCOUNTERED ▽ | NE | 1/23/23 |
| END OF DRILLING (0 hrs.) ▽ | ____ | ____ |

DATE STARTED 1/23/23
DATE FINISHED 1/23/23
FIELD OBSERVER: S. Dillon
CHECKED BY: J. Serpico

**ASTM D-1586**

| DEPTH BELOW SURFACE (ft.) | SAMPLE NUMBER / DEPTH (ft.) | BLOWS PER 6 INCHES 0-6" | 6-12" | 12-18" | 18-24" | RECOVERY (in) | POCKET PENETROM. (tsf) | MOISTURE (%) | WATER SYMBOL | PROFILE DEPTH / ELEV. | IDENTIFICATION OF SOILS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | - | 13 | 13 | 12 | 4 | | | | | S-1: ±6" Asphalt<br>Gray, Brown mf GRAVEL, some(+) cmf SAND, trace(+) Silt & Clay. (Moist). |
| | 0.0'-2.0' | | | | | | | | | | |
| | S-2 | 4 | 3 | 7 | 7 | 12 | | | | | S-2: Gray, Brown mf GRAVEL, some Silt & Clay, little cmf Sand. Occasional wood debris. (Moist). |
| | 2.0'-4.0' | | | | | | | | | | |
| 5 | S-3 | 7 | 7 | 7 | 8 | 8 | 2.75 | | | | S-3: Gray, Brown CLAY & SILT, little mf Gravel, little(-) mf Sand. (Moist). |
| | 4.0'-6.0' | | | | | | | | | | |
| | S-4 | 5 | 5 | 4 | 7 | 8 | 2.75 | | | | S-4: Gray, Brown CLAY & SILT, trace mf Sand, trace f Gravel. (Moist). |
| | 6.0'-8.0' | | | | | | | | | | |
| | S-5 | 3 | 13 | 14 | 15 | 0 | | | | | S-5: No Recovery. |
| 10 | 8.0'-10.0' | | | | | | | | | | |
| | S-6 | 10 | 13 | 17 | 22 | 24 | | | | | S-6: Brown, Gray cmf SAND, little(+) Clay & Silt, little(-) mf Gravel. (Moist). |
| | 10.0'-12.0' | | | | | | | | | | |
| | | | | | | | | | | 12.0 | |
| | | | | | | | | | | -12.0 | END OF TEST BORING AT 12.0 FEET |
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NOTES:

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# Appendix B

## Seismic Design Information

# 2421 US-1, North Brunswick Township, NJ 08902, USA

**Latitude, Longitude: 40.4421355, -74.5055867**


| | |
|---|---|
| **Date** | 4/27/2023, 3:12:13 PM |
| **Design Code Reference Document** | ASCE7-16 |
| **Risk Category** | II |
| **Site Class** | D - Default (See Section 1 3) |

| Type | Value | Description |
|---|---|---|
| $S_S$ | 0 25 | $MCE_R$ ground motion. (for 0.2 second period) |
| $S_1$ | 0 055 | $MCE_R$ ground motion. (for 1.0s period) |
| $S_{MS}$ | 0 4 | Site-modified spectral acceleration value |
| $S_{M1}$ | 0 132 | Site-modified spectral acceleration value |
| $S_D$ | 0 266 | Numeric seismic design value at 0.2 second SA |
| $S_D$ | 0 088 | Numeric seismic design value at 1.0 second SA |

| Type | Value | Description |
|---|---|---|
| SDC | B | Seismic design category |
| $F_a$ | 1.6 | Site amplification factor at 0.2 second |
| $F_v$ | 2.4 | Site amplification factor at 1.0 second |
| PGA | 0.149 | $MCE_G$ peak ground acceleration |
| $F_{PGA}$ | 1.501 | Site amplification factor at PGA |
| PGA | 0.224 | Site modified peak ground acceleration |
| $T_L$ | 6 | Long-period transition period in seconds |
| SsRT | 0.25 | Probabilistic risk-targeted ground motion. (0.2 second) |
| SsUH | 0.265 | Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration |
| SsD | 1.5 | Factored deterministic acceleration value. (0.2 second) |
| S1RT | 0.055 | Probabilistic risk-targeted ground motion. (1.0 second) |
| S1UH | 0.058 | Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration. |
| S1D | 0.6 | Factored deterministic acceleration value. (1.0 second) |
| PGAd | 0.5 | Factored deterministic acceleration value. (Peak Ground Acceleration) |
| $PGA_{UH}$ | 0.149 | Uniform-hazard (2% probability of exceedance in 50 years) eak Ground Acceleration |
| $C_{RS}$ | 0.942 | Mapped value of the risk coefficient at short periods |
| $C_{R1}$ | 0.944 | Mapped value of the risk coefficient at a period of 1 s |
| $C_V$ | 0.8 | Vertical coefficient |

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